

Dec. 14, 1965

F. BIANCHI
BOX CONSTITUTED OF AN OUTER FOLDED CARTON
AND AN AIRTIGHT INNER CASING

3,223,230

Filed Sept. 18, 1963

2 Sheets-Sheet 1

Fig. 1

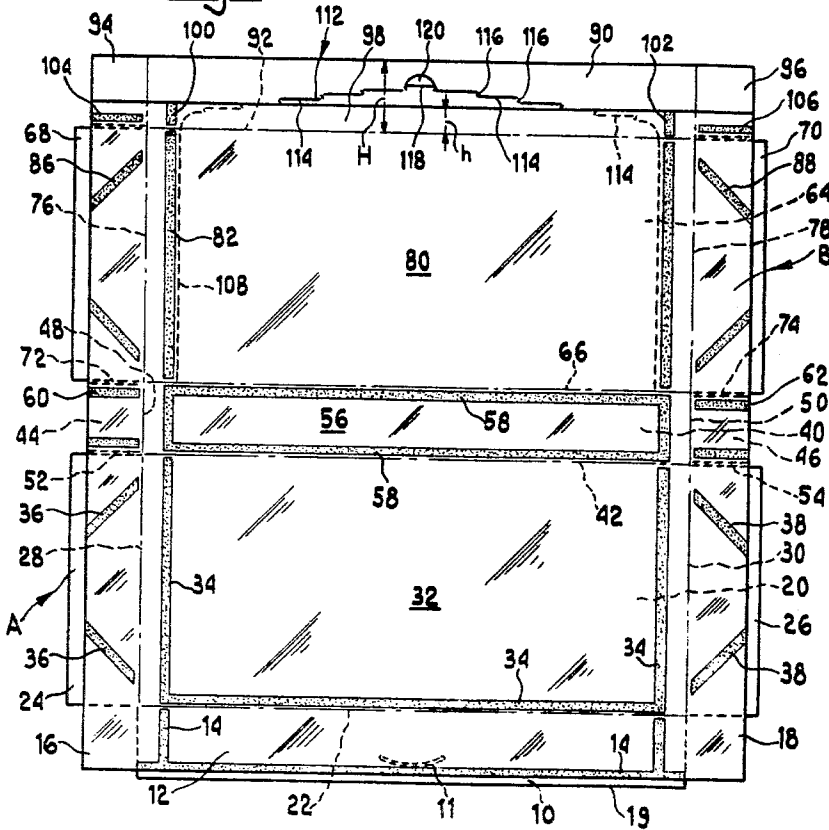
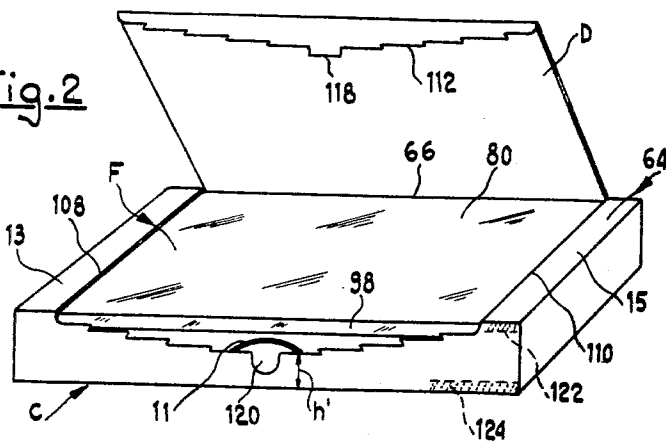


Fig. 2



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2 Sheets-Sheet 2

Fig. 3

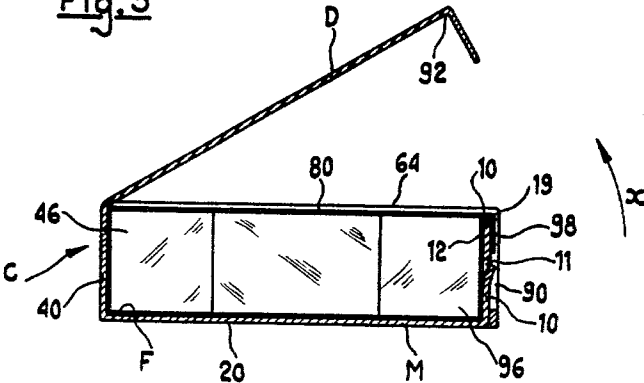
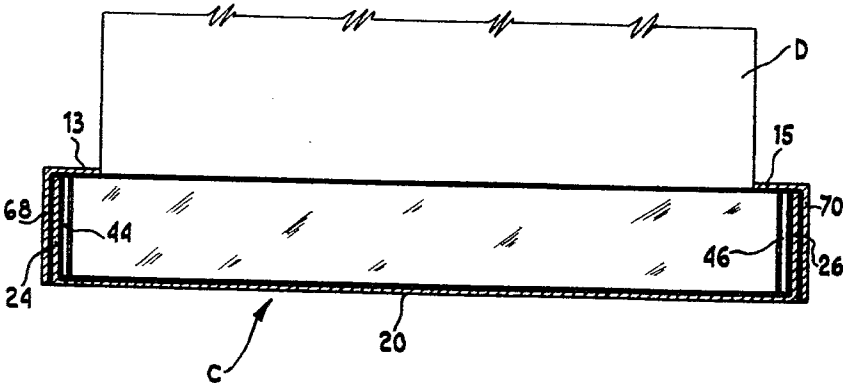


Fig. 4



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BOX CONSTITUTED OF AN OUTER FOLDED CARTON AND AN AIRTIGHT INNER CASING

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2 Claims. (Cl. 296—45.31)

This invention relates to airtight boxes produced from dinked blanks of cardboard or the like.

Boxes made from dinked cardboard blanks, and especially designed for the packaging of foodstuffs, such as biscuits or the like, are already known. Such boxes consist of a raw cardboard container, covered by a casing that snugly follows the shape thereof, and whereon indications and illustrations related to the packaged product are printed. Such casing is merely wound around the box, without being bound therewith.

Many drawbacks are shown by the boxes of the above described type. Thus for example, after the outer cover is removed, the packaged goods come into contact with the ambient air and therefore are subject to spoilage, even before the box is sold. Moreover, after the removal of the outer casing, no indication exists about the box contents and the origin thereof, since such indications are not printed on the cardboard box itself.

Another drawback results from the faulty closing action of the box cover, which is free once the casing is removed, and is not provided with means for securing such cover in its closed position. Moreover, there is not even a support for the cover, when it is in its closed position, whereby the cover may be more or less deeply forced into the box.

Owing to the very structure of the above defined box, and since the contents thereof are always kept in direct contact with the cardboard box it is essential particularly when foodstuffs are packaged therein, that a high grade of cardboard be utilized. An important requirement is that no unpleasant odor which might be imparted to the foodstuffs be present in the cardboard. Such requirement cannot be fully met, however, since even when no unpleasant odor is present in the cardboard, such a drawback will still exist, due to the adhesive which is necessarily used to secure the different box components with one another.

The above and further drawbacks are obviated by the invention, by the provision of a process for producing airtight boxes from dinked blanks of cardboard or the like, which are particularly suitable for the packaging of foodstuffs, such as biscuits or the like, such process being characterized in that at least one flexible sheet of material such as paper, metal, or plastic which is impervious to air, moisture and fats is secured, along pre-established and purposely designed lines, to the inner surface of a dinked cardboard blank, whereupon after the required folding and glueing operation, the finished box will consist of an outer carton and an inner casing which are tightly connected with one another, and of which the inner casing is made of flexible material, and is gas-tight, even after the cover of the outer carton has been opened or removed.

The composite box, made according to the above described procedure, is characterized in that it consists of an outer carton and an inner casing in which all indicia and illustrations related to the packaged contents are printed on the outside of the outer carton while the inner casing which is made of a flexible material, is unremovably secured to the outer carton, thus acting as a lining thereof. The packaged goods are therefore

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in contact with said inner casing, which forms a closed airtight structure, as a consequence of the box forming and sealing operations.

The sheet of flexible material, which is designed to form the inner casing, is secured, preferably by means of an adhesive, to the inside surface of the dinked cardboard blank, in such a manner that the connection will take place along linear zones, leaving free the two sheets at least where the box cover is in contact with its lining, whereby it is possible to have said cover opened or even removed from the box without tearing the inner casing, which will remain intact until it is intentionally torn open.

According to an advantageous embodiment of the box according to the invention, when a parallelepipedon shape is to be formed, the flexible sheet is glued to the cardboard blank in such a manner as to form a lower section, having a depth equal to height of the box side-wall, to which it is to be glued, as well as an upper section, having preferably a depth smaller than that of the former section, and adapted to be glued to the box wall which is to be connected with the former side wall (thus obtaining a double thickness side wall), whereby an overlapping of said upper and lower sections of sheet is obtained, which results in the sheet assuming a continuous tubular cross-sectional shape.

The above and further features of this invention will be better appreciated from a consideration of the following description and drawings. In the drawing:

FIG. 1 is a plan view of a cardboard blank and of a flexible sheet connected therewith, which are designed to form the airtight box according to this invention.

FIG. 2 is a perspective view of an advantageous embodiment form of the box shown with the lid lifted, while the inside casing is yet intact.

FIG. 3 is a cross-sectional view of the box shown in FIG. 2, and

FIG. 4 is a longitudinal section of the same box.

Referring to said drawings, FIG. 1 shows the development on a plane of a dinked blank A, made of cardboard or like material, and of the inside sheet or lining B, made of a flexible material, such as oiled paper, plastic, metallized paper or the like, said blank A and lining B, being secured with one another, as for example by means of a suitable adhesive or glue.

In particular, the dinked blank A is inclusive of a rectangular end wall portion 10, whereon the related section 12 of lining B is glued along the linear, narrow zone 14, whereby the central region of wall portion 10 is left substantially free. The side extensions 16, 18 of section 12 project beyond said wall portion 10.

The section 20 of blank A which becomes the bottom of box C after erection of such box, is adjacent to wall portion 10.

The bottom 20 is separated from the wall portion 10 by the fold line 22, while the lugs 24-26, extending sideways from the latter wall, are separated therefrom by the fold lines 28-30. The section 32 of the flexible lining is designed to cooperate with the bottom 20 and the lugs 24, 26 of blank A, and is secured to bottom 20 by narrow linear adherent zones 34, whereby the whole middle portion of bottom 20 remains free from said section 32. The section 32 is connected with the lugs 24-26, through the slanting narrow adherent zones 36-38.

The rear end wall 40 of the box which is separated from said bottom 20 by the fold line 42, is located above the bottom 20. The lugs 44-46 extend sideways from said wall 40, and are separated therefrom by the fold lines 48-50, such lugs being cut along the lines 52-54 for separation from lugs 24-26.

The section 56 of flexible lining B, is glued to wall

40 along the narrow strips 58, and to lugs 44-46 along the narrow strips 60-62.

The top wall 64 is separated from the wall 40 by the fold line 66 and extends above said wall 40 and is adapted to form the greater portion of lid D, as stated hereinafter in more detail.

The lugs 68-70 extend sidewise from the top wall 64, and are separated from the lugs 40-46 by the cuts 72-74, while being separated from the top wall 64 by the fold lines 76-78.

The section 80 of sheet B is fastened to wall 64 by glueing along the narrow strips 82-84 and is connected to lugs 68, 70 along the narrow strips 86-88. As can be seen, the whole central portion of the section 80, facing the related portion of top wall 64, is detached from the latter portion, for the purpose as stated hereinbefore, namely, in order to allow the box lid to be lifted, without tearing the sheet B.

Finally a wall portion 90 of blank A is separated from wall 64 by the fold line 92, and includes side lugs 94-96. Said wall portion 90 (which in the finished box is adjacent wall portion 10, thereby forming a double thickness front wall) is inclusive of the forward section of cover D, as stated later in more detail.

The section 98 of flexible sheet B is glued to wall portion 90 along the narrow strips 100-102, and to lugs 94-96 along the narrow strips 104-106. As can be seen, the depth h of section 98 is slightly smaller than half of the depth H of wall 90.

In order to form the cover or lid D, two lines of parallel notches 108-110 are cut in the top wall 64. Such notches extend from the fold line 66, for the entire depth of top wall 64. They continue also along the wall portion 90 where, however, a peculiar indented notch shape 112 is followed. In practice, such notch shape includes staggered notches which are formed by cuts 114 extending in parallel relation with one another and defined at both ends by perpendicular lengths 116 of uncut cardboard. Thus, the shape of lengths 114-116 is in the form of a tothing, wherein the middle tooth 118 is higher than all other ones and is adapted to cooperate with a semicircular shaped opening 120, that is cut below the tooth 118 on the wall portion 90, to allow a finger nail of the user to be inserted thereinto for tearing the lid off, such operation being adapted for being performed in a very easy and reliable manner, since the lid can be torn-off firstly along the tothing 114-116, and then along the notches 108-110.

For erecting the box C, the composite blank A-B is firstly folded around said fold lines, whereupon sections thereof are suitably glued with one another. In more detail, the wall portion 90, together with the related section 98 of the sheet A, is glued to the outer surface of wall portion 10, along the horizontal glueing strips 122-124. The width of glueing strip 122 must be less than the depth h of the section 98, while the width of strip 124 must be less than the depth h' , because otherwise the sheet B would be torn off along with the lid. After the wall portions 10-90 have been glued to one another as stated above, only the lugs 94 and 44 along with the related portions of sheet B are folded whereafter only the lugs 24 and 68 are bent and glued. The box thus erected will have a filling opening bounded by lugs 26 and 70 which are still open and goods such as biscuits or the like are introduced through said opening, whereafter the box is sealed by folding the lugs 46, 96, and lugs 26, 70 which are then suitably glued.

As can be readily appreciated, by the above stated glueing operations, the inside casing F becomes airtight, said casing being formed by the folding of sheet B. The casing F is firmly secured to the outer carton M, which in turn has been formed by the folding and the glueing of the dinked blank A.

As can be readily seen the wall portion 10 has a semi-

circular shaped notch 11 into which the front portion of lid D is engaged, when the lid is returned to its closed position, whereby the best positioning and securing of such lid is obtained, contrary to what occurs in known boxes wherein the covers always remain in a somewhat unsteady position.

Referring now particularly to FIGS. 2, 3 and 4, it can be clearly seen that the box C is formed by the outer carton M and the inner casing F and it is also clearly seen how the section 98 of the airtight casing F is superposed over the related portion of the section 12, such superimposition being made through the interposition of wall portion 10.

In the configuration of box C as shown, the cover D is lifted after the notched tothing 114-116, and the notched lines 108-110 have been separated, the edges 13-15 forming part of top wall 64, and being laterally limited by lines 108, 110.

After what has been previously stated, the performance and utilization of the box as shown are apparent, and they may be summarized as follows:

The goods packaged in the box C are kept out of contact with the air as long as the inner casing F, constituted of the sheet B, is not torn, and at the same time the goods are kept out of contact with the cardboard of which the outer carton M is made, thereby permitting the utilization for the outer carton of a medium-grade cardboard, without incurring the danger of transfer of unpleasant odor to the contents, particularly in the case when the goods are foodstuffs.

In contrast to known boxes, all legends and illustrations can be printed on the outer surfaces of carton M, whereby all data concerning the contents and origin thereof, can be referred to even after the lid has been opened.

In the box according to the invention, particular attention has been devoted to the closing system thereof. When the box is yet wholly intact, both the casing F and the carton M have a practically continuous tubular cross-section. To lift the lid D, the operator must act on the tooth 118, by inserting a finger nail, or a flat tool, into the semi-circular shaped notch 120. Then, by pulling in the direction of arrow X, a tearing operation is initiated, and the middle tooth can be easily separated from portion 10. Then all the other notches 114 which may be, or not be in parallel relation with one another, are opened, whereafter the notched lines 108-110 are torn to the fold line 66, around which the lid D can be swung.

A peculiar feature of the box according to the invention is that, even after the lid D has been opened, the box contents are still out of contact with the air, since the casing F has not been torn. Thus, to reach said contents the sheet B, of which the inner casing is made, must also be torn.

When the box is to be again closed, the lid D is lowered and can be brought in a position exactly parallel to bottom 20, since the fold line 92 comes to rest on the edge 19 of wall portion 10. To keep the lid D in its closed position, the front portion of tothing 114, 116, i.e., the tooth 118 and the two adjacent teeth are engaged by the operator into the semi-circular notch 11, thereby securing the lid in its closed position.

In the practical application of the box according to the invention many changes may be made, both as regard the shape of the box and to the sequence of different operational steps as needed for producing such box, provided that no impairment is made in the basic inventive idea of obtaining a box made-up of an outer carton and an inner casing wherein the latter is not torn when the lid of the outer carton is raised, said inner casing being torn open only when directly acted upon by the operator.

While the invention has been described with some detail, it is to be understood that the description is for the purpose of illustration only, and is not definitive of the

limits of the inventive idea. The right is reserved to make any changes in the details of construction, without departing from the spirit and scope of the invention as defined in the attached claims.

What I claim is:

1. An article of manufacture comprising a box including an outer folded carton and an airtight inner casing secured to said outer carton, said carton being a one-piece body including a bottom, a top wall, side walls and end walls, said side walls and end walls being foldably joined to said bottom and top walls, said carton further including a lid detachably joined to the top wall and one end wall and foldably connected to another end wall, said casing being a one-piece member constituted of flexible and air impermeable material, the latter material being adhesively secured in limited zones to the said bottom, top wall, end walls and side walls to form a completely closed and sealed casing when the carton is erected, said lid being free of the casing to permit opening of the said lid without disturbing the closure of the inner casing, said casing material being adhesively secured to the side walls of the carton such that the carton can be sequentially erected to leave one side wall open to enable introduction of material into the inner casing whereafter upon completion of the erection of the carton the casing is completely closed with the material within said casing, said side walls being constituted by overlapped and adherently secured side lugs respectively attached to the top wall and the bottom at opposite sides thereof, said flexible material being secured to each of said side lugs along relatively thin diagonal zones, such that at least one thickness of said flexible material is sandwiched between the side lugs of each side wall, said one end wall being constituted of two overlapped wall portions respectively joined to said bottom and said top wall, said wall portions being adherently secured together with the wall portion on said top wall outside the wall portion on the bottom, said wall portion joined to said top wall being provided with a plurality of notches, said top wall having a line of perforations extending from said notches to the fold line joining the top wall with the other end wall, said lid being detachable from said top wall along said line of perforations and from said wall portion connected to said top wall by said notches, said wall portion on the bottom having a notch for receiving and securing the lid thereto after the carton is opened.

2. A box of rectangular outline comprising an outer folded carton constituted of a one-piece body and in-

cluding a bottom panel, a top wall, a rear wall foldably connected to said top wall and said bottom panel, first and second side walls respectively constituted of overlapped and secured side lugs which are respectively foldably connected to the bottom panel and the top wall, a front wall including a first portion foldably connected to the bottom panel and a second portion overlying the first portion and secured thereto, said second portion being foldably connected to the top wall, said box further comprising an inner one-piece casing of air impermeable material covering substantially the entire inner surface of the bottom panel, top wall, front and rear walls, and side walls, said casing being adherently secured along marginal edges of said bottom panel and said front, rear and top walls, said air impermeable material being secured to said side lugs along diagonal intermediate zones such that one thickness of material is sandwiched between the overlapped side lugs of each side wall, said second portion of the front wall being provided with a plurality of notches, said top wall being provided with a pair of parallel lines of notches extending from the notches in the said second portion to the rear wall whereby a lid is formed by detachment along said notches, said inner casing being adherently secured to said top wall and said second portion of the front wall such that said inner casing is free of said lid to thereby enable the raising and the lowering of the lid without disturbing the closure of the inner casing, said first portion of the front wall having a notch for receiving and securing the lid thereto after the carton is opened.

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